

BLACK&DECKER®

10 AMP SMART®
FULLY AUTOMATIC BATTERY CHARGER
INSTRUCTION MANUAL



Catalog Number BCS10B

SAFETY GUIDELINES / DEFINITIONS

⚠ DANGER: Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING: Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

CAUTION: Used without the safety alert symbol indicates potentially hazardous situation which, if not avoided, may result in property damage.

RISK OF UNSAFE OPERATION. When using tools or equipment, basic safety precautions should always be followed to reduce the risk of personal injury. Improper operation, maintenance or modification of tools or equipment could result in serious injury and property damage. There are certain applications for which tools and equipment are designed. Black & Decker strongly recommends that this product NOT be modified and/or used for any application other than for which it was designed. Read and understand all warnings and operating instructions before using any tool or equipment.

IMPORTANT SAFETY INSTRUCTIONS

⚠ GENERAL SAFETY WARNINGS AND INSTRUCTIONS FOR ALL BATTERY CHARGERS

READ ALL INSTRUCTIONS

⚠ WARNING: Read all instructions before operating product. Failure to follow all instructions listed below may result in electric shock, fire and/or serious injury.

• **AVOID DANGEROUS ENVIRONMENTS:** Don't use charger in damp or wet locations. Don't use charger in the rain.

• **KEEP CHILDREN AWAY.** All visitors should be kept at a distance from work area.

• **STORE CHARGER INDOORS.** When not in use, charger should be stored indoors in dry, and high or locked-up place — away from reach of children.

• **GROUND FAULT CIRCUIT INTERRUPTER (GFCI)** protection should be provided on the circuits or outlets to be used. Receptacles are available having built in GFCI protection and may be used for this measure of safety.

• **DO NOT OPERATE** near flammable liquids or in gaseous or explosive atmospheres. Sparks might ignite fumes.

• **OUTDOOR USE EXTENSION CORDS.** When charger is used outdoors, use only extension cords intended for use outdoors and so marked.

• **EXTENSION CORDS.** Make sure your extension cord is in good condition. When using an extension cord, be sure to use one heavy enough to carry the current your product will draw. An undersized cord will cause a drop in line voltage resulting in loss of power and overheating. The following table shows the correct size to use depending on cord length and nameplate ampere rating. If in doubt, use the next heavier gage. The smaller the gage number, the heavier the cord.

Volts	Minimum Gage for Cord Sets				
	Total Length of Cord in Feet				
120V	0-25 (0-7,6m)	26-50 (7,6-15,2m)	51-100 (15,2-30,4m)	101-150 (30,4-45,7m)	
	240V	0-50 (0-15,2m)	51-100 (15,2-30,4m)	101-200 (30,4-60,9m)	201-300 (60,9-91,4m)
Ampere Rating		American Wire Gage			
More Than	Not more Than				
0 -	6	18	16	16	14
6 -	10	18	16	14	12
10 -	12	16	16	14	12
12 -	16	14	12	Not Recommended	

⚠ WARNING: This product or its power cord contains lead, a chemical known to the State of California to cause cancer and birth defect or other reproductive harm. Wash hands after handling.

⚠ WARNING: BURST HAZARD: Do not use the unit for charging dry-cell batteries that are commonly used with home appliances. These batteries may burst and cause injury to persons and damage property. Use the unit for charging/boosting a LEAD-ACID battery only.

⚠ WARNING: SHOCK HAZARD:

• If an extension cord is used, make sure that:

a) the pins of extension cord are the same number, size and shape as those in the charger,

b) the extension cord is properly wired and in good electrical condition,

c) the wire size is large enough for the AC rating of the charger as indicated in the table in the previous section.

• Do not operate unit with damaged cord or plug; or if the unit has received a sharp blow, been dropped, or otherwise damaged in any way. Do not disassemble the unit; take it to a qualified service technician when service or repair is required. Incorrect reassembly may result in a risk of electric shock or fire, and will void warranty.

• Use of an attachment not supplied, recommended or sold by manufacturer specifically for use with this unit may result in a risk of electrical shock and injury to persons.

• NEVER submerge this unit in water; do not expose it to rain, snow or use when wet.

• To reduce risk of electric shock, disconnect the unit from any power source before attempting maintenance or cleaning. Turning off controls without disconnecting will not reduce this risk.

⚠ WARNING: RISK OF EXPLOSIVE GASES

• Working in the vicinity of a lead acid battery is dangerous. Batteries generate explosive gases during normal battery operation. For this reason, it is of the utmost importance that each time before using the charger you read this manual and follow instructions exactly.

• To reduce the risk of battery explosion, follow these instructions and those published by the battery manufacturer and manufacturer of any equipment you intend to use in the vicinity of the battery. Review cautionary markings on these products and on the engine.

• This equipment employs parts (switches, relays, etc.) that produce arcs or sparks. Therefore, if used in a garage or enclosed area, the unit MUST be placed not less than 18 inches above the floor.

• THIS UNIT IS NOT FOR USE BY CHILDREN AND SHOULD ONLY BE OPERATED BY ADULTS.

⚠ CAUTION: TO REDUCE THE RISK OF INJURY OR PROPERTY DAMAGE:

• Pull cord by plug rather than cord when disconnecting the 120V AC Charging Adapter from the unit.

• NEVER ATTEMPT TO JUMP-START OR CHARGE A FROZEN BATTERY.

• Vehicles that have on-board computerized systems may be damaged if vehicle battery is charged. Before charging, read the vehicle's owner's manual to confirm that external-starting assistance is suitable.

• When working with lead acid batteries, always make sure immediate assistance is available in case of accident or emergency.

• Always have protective eyewear when using this product: contact with battery acid may cause blindness and/or severe burns. Be aware of first aid procedures in case of accidental contact with battery acid.

• Have plenty of fresh water and soap nearby in case battery acid contacts skin.

• If battery acid contacts skin or clothing, wash immediately with soap and water for at least 10 minutes and get medical attention immediately.

• Never smoke or allow a spark or flame in vicinity of vehicle battery, engine or charger.

• Remove personal metal items such as rings, bracelets, necklaces and watches when working with a lead acid battery. A lead acid battery can produce a short circuit current high enough to weld a ring, or the like of a metal, causing a severe burn.

• Never allow battery acid to come in contact with this unit.

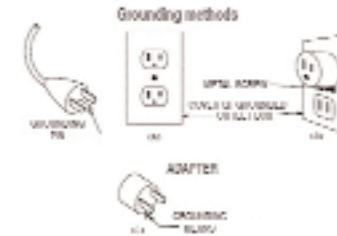
• Do not operate this unit in a closed area or restrict ventilation in any way.

• **FIRST AID – SKIN:** If battery acid comes in contact with skin, rinse immediately with water, then wash thoroughly with soap and water. If redness, pain, or irritation occurs, seek immediate medical attention.

EYES: If battery acid comes in contact with eyes, flush eyes immediately, for a minimum of 15 minutes and seek immediate medical attention.

LCD LIQUID CRYSTAL DISPLAY: If liquid crystal comes in contact with your skin: Wash area off completely with plenty of water. Remove contaminated clothing. If liquid crystal gets into your eye: Flush the affected eye with clean water and then seek medical attention. If liquid crystal is swallowed: Flush your mouth thoroughly with water. Drink large quantities of water and induce vomiting. Then seek medical attention.

• **GROUNDING AND AC POWER CORD CONNECTION INSTRUCTIONS –** Charger should be grounded to reduce risk of electric shock. Charger is equipped with an electric cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an outlet that is properly installed and grounded in accordance with all local codes and ordinances.



The battery charger is for use on a nominal 120 volt circuit, and has a grounding plug that looks like the plug illustrated in Figure A. A temporary adapter, which looks like the plug illustrated in Figures B and C may be used to connect this plug to a two-pole receptacle as shown in Figure B if a properly grounded outlet is not available. The temporary adapter should be used only until a properly grounded outlet can be installed by a qualified electrician.

⚠ DANGER – Before using adapter as illustrated, be certain that the center screw of the outlet is grounded. The green-colored rigid ear or lug extending from the adapter must be connected to a properly grounded outlet. Make certain it is grounded. If necessary, replace the original outlet cover plate screw with a longer screw that will secure adapter ear or lug to outlet cover plate and make ground connection to grounded outlet.

⚠ DANGER – Never alter AC cord or plug provided – if it will not fit outlet, have proper outlet installed by a qualified electrician. Improper connection can result in a risk of an electric shock.

Preparing to Charge

1. Determine voltage of battery to be charged by referring to the vehicle manual.
2. If it is necessary to remove battery from vehicle to charge, or to clean terminals, always remove grounded terminal from battery first. Make sure all accessories in the vehicle are off, so as not to cause an arc.
3. Clean battery terminals. Do not allow corrosion to come in contact with eyes.
4. Add distilled water in each cell until battery acid reaches level specified by battery manufacturer. This helps purge excessive gas from cells. Do not overfill. For a battery without cell caps (maintenance free), carefully follow manufacturer's charging instructions.
5. Study all battery manufacturer's specific precautions, such as removing or not removing cell caps while charging, and recommended rates of charge.
6. Remove battery completely from boat/airplane or any confined area before charging.

Charger Location

1. Locate charger as far away from battery as cables permit.
2. NEVER place charger directly above battery being charged; gases from battery will corrode and damage charger.
3. NEVER allow battery acid to drip on charger when reading gravity or filling battery.
4. NEVER operate charger in a closed-in area or restrict ventilation in any way.
5. Marine batteries must be removed and charged on shore.
6. Do not set a battery on top of charger.

Charger Clamp Connection Precautions

1. Connect and disconnect clamps only after removing AC cord from electric outlet.
2. Never allow clamps to touch each other.
3. Attach clamps to battery and chassis as indicated in "Battery Installed in Vehicle" steps 5 and 6, and in "Battery Outside of Vehicle" steps 2, 4 and 5.

⚠ CAUTION: A spark near the battery may cause an explosion. Follow these steps to reduce the risk of a spark near the battery when the battery is installed in a vehicle:

1. Position AC and clamp cords away from hood, door, or moving engine parts.
2. Stay clear of fan blades, belts, pulleys, and other parts that can cause injury to persons.
3. Check polarity of battery posts. POSITIVE (POS, P, +) battery post usually has larger diameter than NEGATIVE (NEG, N, -) post.
4. Determine which post of battery is grounded (connected) to the chassis. If NEGATIVE post is grounded to chassis (as in most vehicles), see 5. If POSITIVE post is grounded to the chassis, see 6.
5. For negative-grounded vehicle, connect POSITIVE (RED) clamp from battery charger to POSITIVE (POS, P, +) ungrounded post of battery. Connect NEGATIVE (BLACK) clamp to vehicle chassis or engine block away from battery. Do not connect clip to carburetor, fuel lines, or sheet-metal body parts. Connect to heavy gauge metal part of the frame or engine block.
6. For positive-grounded vehicle, connect NEGATIVE (BLACK) clamp from battery charger to NEGATIVE (NEG, N, -) ungrounded post of battery. Connect POSITIVE (RED) clamp to vehicle chassis or engine block away from battery. Do not connect clip to carburetor, fuel lines or sheet-metal body parts. Connect to a heavy gauge metal part of the frame or engine block.
7. When disconnecting charger, disconnect AC cord, remove clamp from vehicle chassis, and then remove clamp from battery terminal.
8. Do not charge the battery while the engine is operating.
9. See operating instructions for length of charge information.

⚠ CAUTION: A spark near the battery may cause an explosion. Follow these steps to reduce the risk of a spark near the battery when the battery has been removed from a vehicle:

1. Check polarity of battery posts. Positive post (marked POS,P, +) usually has a larger diameter than the Negative battery post (marked NEG, N, -).
2. Attach a 24-inch (minimum length) #6 AWG insulated battery cable to the NEGATIVE battery post (marked NEG, N, -).
3. Connect the POSITIVE (RED) battery clamp to the POSITIVE battery post (marked POS, P, + or red).
4. Stand as far back from the battery as possible, and do not face battery when making final connection.
5. Carefully connect the NEGATIVE (BLACK) charger clamp to the free end of the battery cable connected to the NEGATIVE terminal.
6. Set the charge rate to appropriate setting according to battery size.
7. When disconnecting charger, always do so in reverse sequence of connecting procedure and break first connection while as far away from battery as practical.

Note: A marine (boat) battery must be removed and charged on shore. To charge it on board requires equipment specially designed for marine use. This unit is NOT designed for such use.

- Check unit periodically for wear and tear. Take to a qualified technician for replacement of worn or defective parts immediately.
- Read and Understand This Instruction Manual Before Using This Unit.

SAVE THESE INSTRUCTIONS

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference to radio communications. However, there is not guarantee that interference to radio or television reception, with can be determined by turning the equipment off and on, user is encouraged to try to connect the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between equipment and receiver.
- Connect equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not approved by the party responsible for compliance could void user's authority to operate the equipment.

⚠ WARNING: TO REDUCE THE RISK OF INJURY:

Follow these instructions and those published by the battery manufacturer and manufacturer of any equipment you intend to use with this unit. Review cautionary markings on this product and on engine.

INTRODUCTION

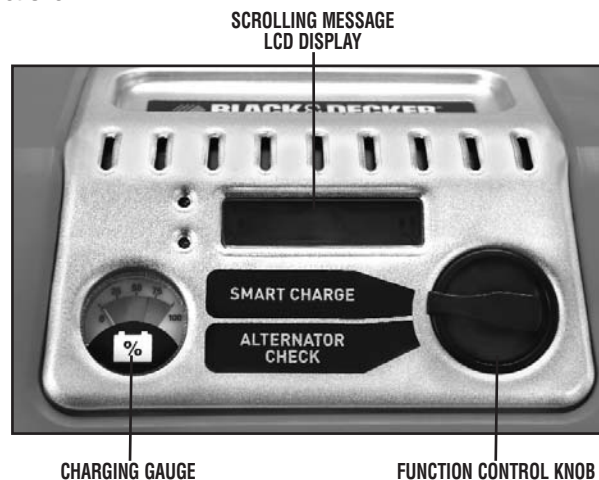
Thank you for selecting the **10 Amp Battery Charger**. With proper care and use, it will give you years of dependable service. This battery charger has a high charge rate of up to 10 amps.

This battery charger features 3-stage, high-efficiency charging technology, built-in microprocessor control that ensures fast, safe and complete charging of serviceable batteries.

FEATURES

- Unit automatically selects the proper charge rate setting
- 3-stage high-frequency switch mode automatic rapid charging
- Automatic Temperature Compensation
- Digital diagnostics
- Alternator check
- Digital display shows operating mode, fault conditions and battery voltage
- Charging Gauge shows the status of the battery being charged
- Spark resistant reverse polarity and short circuit protection for user with reverse polarity indication
- Cables wrap around the side ears and clamps clip to the back of unit for convenient storage
- Microprocessor control (Digital Smart Control)/high frequency power
- Compensates for low AC from extension cord use
- Lightweight, high-efficiency design

Controls and Functions



FUNCTION CONTROL KNOB

The Function Control Knob is used to select either the Smart Charge or Alternator Check function. **This selection must be made BEFORE connecting the battery charger clamps to the battery.**

Smart Charge analyzes the battery and starts the recharging process.

Alternator Check checks to determine that the alternator is keeping up with the electrical load.

SCROLLING MESSAGE LCD DISPLAY

The **Scrolling Message LCD Display (LCD)** indicates the various status messages and/or conditions as described in the Smart Charge Function and Alternator Check sections that follow.

CHARGING GAUGE

The **Charging Gauge** displays the percentage of charge during the Smart Charge process.

SETTING UP THE UNIT

Ensure that all installation and operating instructions and safety precautions are understood and carefully followed by anyone installing or using the charger. Follow the steps outlined in the "Important Safety Instructions" section of this manual.

After turning the Function Control Knob to the desired function position, plug the charger into a functioning 120 volt AC outlet. Next, connect charger clamps correctly to the battery.

Note: The LCD displays CHECK CLAMP CONNECTION TO THE BATTERY when the unit is plugged in and there is no battery connected to the charger or the clamps are not connected properly.

If a problem with the battery is detected at any time in the course of the charging or alternator check process, the LCD will display a Fault Condition message and the Status LED will light red. Refer to the "Troubleshooting" section of this Instruction Manual and take the appropriate action.

SMART CHARGE

1. Set up the unit as described in the “Setting Up the Unit” section, selecting the Smart Charge function before connecting the clamps to the battery.
2. When the unit is done analyzing the battery, it will begin the recharging process. The LCD will then display the battery voltage (for example: CHARGING / 12.5 VOLTS). As the battery charges, the arrow on the Charging Gauge will move indicating the current percent of charge in the battery, from the red zone (0-25% charged) toward the green zone (90-100% charged).
3. When the unit is fully charged, the LCD displays BATTERY IS FULLY CHARGED. The status LED will light green.
4. Disconnect first the AC cord, then the clamps to shut the unit off. Observe the “Important Safety Instructions” at the front of this manual when disconnecting.

ALTERNATOR CHECK

Part 1

No Load (Turn OFF all vehicle’s accessories): The battery must be fully charged before testing the alternator. Run the engine long enough to achieve normal idle speed and verify there is a no-load voltage.

1. Set up the unit as described in the “Setting Up the Unit” section, selecting the Alternator Check function before connecting the clamps to the battery. ANALYZING ALTERNATOR will display on the LCD.
3. Once the unit has finished checking, the LCD will display either ALTERNATOR GOOD (the status LED will light green) or ALTERNATOR BAD OR ENGINE NOT RUNNING (the status LED will light red).

Part 2

Under Load (Accessories ON): Next, load the alternator by turning on as many accessories as possible (except for A/C and DEFROST) and repeat the above four steps.

After completing both alternator checks, disconnect the AC cord and clamps, observing the “Important Safety Instructions” at the front of this manual.

If the first alternator check indicates a good alternator and the second indicates the alternator is not good, the problem could stem from: loose fan belts, an intermittent diode failure or possibly bad connections between the battery and alternator and/or ground.

ALTERNATOR BAD OR ENGINE NOT RUNNING may display because someone has added a number of accessory loads on the charging system, thereby increasing current demand from the alternator. MAKE SURE THAT THE ALTERNATOR IS RATED TO SUPPORT THE APPLICATION.

Note: This check may not be accurate for every make, manufacturer and model of vehicle.

Check only 12 volt systems.

TROUBLESHOOTING

General

The unit will turn on automatically after being properly connected to the battery. If it does not come on, either it is not connected properly to the terminals or the voltage of the battery to be serviced is too low (below 0.3 volts).

Smart Charge Fault Condition Messages

If there is a problem with the connections or battery, the LCD will display the appropriate fault condition message, as follows:

Fault Message	Explanation/Recommendation
CHECK CLAMP CONNECTION TO THE BATTERY	When this message appears, the most common cause is poor connection to battery. <ul style="list-style-type: none">• Observing the “Important Safety Instructions” at the front of this manual, disconnect AC cord and clamps, clean battery terminal and reconnect.• If the situation persists, we recommend taking your battery to a certified automotive service center for evaluation.
REVERSE CLAMPS ON BATTERY (Status LED lights red and continuous warning tone sounds)	The connections to the battery’s positive and negative terminals are incorrect. Observing the “Important Safety Instructions” at the front of this manual, disconnect AC cord and clamps and reconnect to battery with correct polarity.
REPLACE OR SERVICE BATTERY	The battery being charged either has an internal open or shorted cell or is highly sulfated and cannot accept normal charge current. We recommend taking your battery to a certified automotive service center for evaluation.
COOL DOWN CYCLE (Status LED lights red)	The ventilation grill that prevents the air from flowing in and out of the charger may be blocked. <ul style="list-style-type: none">• Observing the “Important Safety Instructions” at the front of this manual, disconnect AC cord and clamps, allow the unit to cool for 30 minutes and reconnect.• Make sure there is ample ventilation before resuming operation.

Fault Message	Explanation/Recommendation
OVERTIME CONDITION	The charging cycle has exceeded 18 hours. This may occur under the following conditions: <ul style="list-style-type: none">• Battery (or batteries, in the case of a battery bank) being charged has/have a capacity over 180 Ah. Disconnect charger from AC outlet and reconnect to start a another 18-hour cycle. Repeat as necessary according to capacity.• If the battery capacity is ≤ 180 Ah and this fault message appears, the battery being charged is possibly defective. We recommend taking your battery to a certified automotive service center for service or replacement.

Charging a Very Cold Battery

If the battery to be charged is very cold (in temperatures below freezing — 0°C/ 32°F), it cannot accept a high rate of charge. The battery will accept a higher charge rate as it warms. NEVER ATTEMPT TO CHARGE A FROZEN BATTERY.

Alternator Check Fault Condition Messages

If there is a problem with the connections or battery, the LCD will display the appropriate fault condition message, as follows:

Fault Message	Explanation/Recommendation
CHECK CLAMP CONNECTION TO THE BATTERY	When this message appears, the most common cause is poor connection to battery. <ul style="list-style-type: none">• Observing the “Important Safety Instructions” at the front of this manual, disconnect AC cord and clamps, clean battery terminal and reconnect.• If the situation persists, we recommend taking your battery to a certified automotive service center for evaluation.
REVERSE CLAMPS ON BATTERY (Status LED lights red and continuous warning tone sounds)	The connections to the battery’s positive and negative terminals are incorrect. Observing the “Important Safety Instructions” at the front of this manual, disconnect AC cord and clamps and reconnect to battery with correct polarity.

CARE AND MAINTENANCE

With proper care and minimal maintenance, this unit will provide years of dependable service. For maximum performance, manufacturer recommends:

- After each use, clean the battery charger clamps — be sure to remove any battery fluid that will cause corrosion of the clamps.
- Clean the outside case of the charger with a soft cloth and, if necessary, mild soap solution.
- Do not allow liquid to enter the charger. Do not operate when charger is wet.
- Keep the charger cords loosely coiled during storage to prevent damage to the cords.